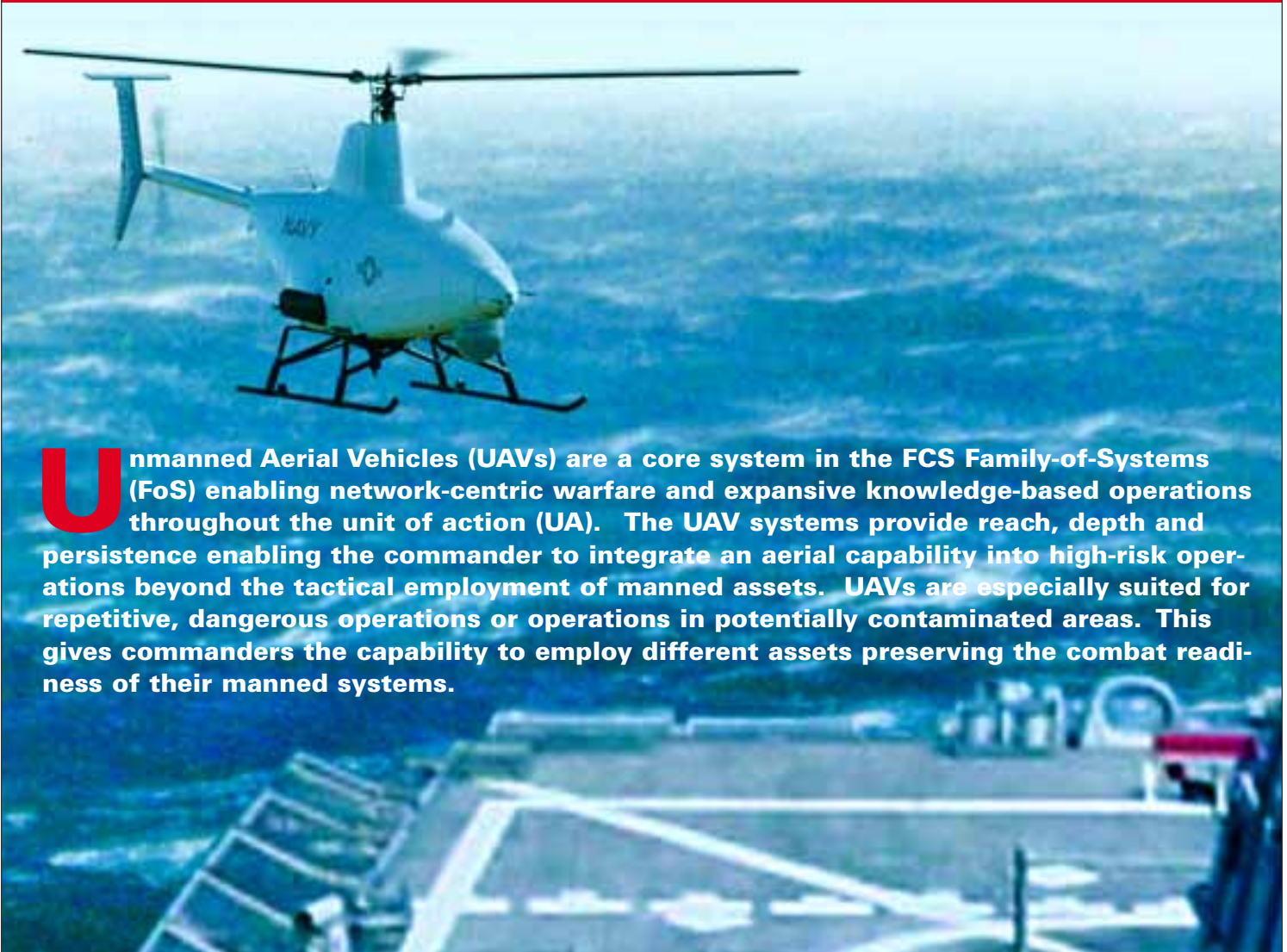


# Unmanned Aerial Vehicles —



**U**nmanned Aerial Vehicles (UAVs) are a core system in the FCS Family-of-Systems (FoS) enabling network-centric warfare and expansive knowledge-based operations throughout the unit of action (UA). The UAV systems provide reach, depth and persistence enabling the commander to integrate an aerial capability into high-risk operations beyond the tactical employment of manned assets. UAVs are especially suited for repetitive, dangerous operations or operations in potentially contaminated areas. This gives commanders the capability to employ different assets preserving the combat readiness of their manned systems.

## Enabling Network-Centric Operations



COL John D. Burke

### FCS UAV Roles

FCS unmanned systems serve three main purposes:

- Advanced intelligence, surveillance and reconnaissance (ISR).
- Communications relay.
- Air-ground or air-to-air cooperative engagement.

The FCS construct of network-centric systems reduces the importance of individual systems and raises the emphasis on common communications, computers, sensors, modeling/simulation, weapons, training and logistics. An individual UAV does not become an FCS Class of UAV until these common characteristics are integrated and tested in a system-of-systems environment.

In the ISR role, UAVs use a variety of sensors such as electro-optic, infrared or meteorological sampling while sending this data back to the networked system of communications and information sharing throughout the UA. The UAV sensors provide situational awareness through “eyes-on” operations, persistent observation of a target of interest or battle damage

assessment (BDA) after precision-strike operations.

The communications relay mode uses the Joint Tactical Radio System in one of its cluster configurations (Cluster 1, 4 or 5) with up to four separate channels. UAVs in this mode will use a combination of radios, data compression, networking waveforms and integrated communications systems compatible across the entire FCS FoS. In the communications-relay mode, the UAV serves the UA with real-time terrestrial communications while overcoming most terrain limitations. The UAV can be positioned to provide communications coverage as the command maneuvers or to provide an enabling capability to forward forces for shaping and deep-strike missions.

UAVs used in the air-ground and air-to-air mode demonstrate flexibility and adaptiveness beyond a single class of systems extending the reach of manned systems throughout the depth of operations. UAVs, when flown in conjunction with the Comanche helicopter, provide a one-two punch of lethal fires with a medium altitude capability for ISR or communications relay. UAVs conducting BDA

missions provide a low-risk means to survey the situation, which enables the commander to determine whether or not further action is required and, if so, allows the commander to conduct a risk analysis to discern which assets should be employed against the target, given the enemy situation.

## UAV Classes/ Acquisition Status

FCS UAVs consist of four classes as follows:

- Class I: Platoon
- Class II: Company
- Class III: Battalion
- Class IV: Brigade

The 2003 FCS source selection process conducted by the FCS Lead Systems Integrator (LSI), the Boeing Co. and its partner Science Applications International Corp., determined the only UAV selected was the FCS Class IV. The Firescout, a Class IV UAV, is a rotary-

wing aircraft manufactured by Northrop Grumman in development with the U.S. Navy. The Army and Navy have entered into a Joint service partnership to cooperate on the Class IV UAV and other UAV experiences to advance the operational needs of both services.

The Navy Firescout program is a key component of the Littoral Combat Ship program that will undergo initial operational test and evaluation in 2007.

The Army elected to defer development of a Class I UAV because the technology was not sufficiently mature to satisfy a requirement to "hover and stare." The Defense Advanced Research Projects Agency has a science and technology



program supporting an advanced concept technology demonstration for U.S. Pacific Command with a vertical take-off and landing aircraft using a ducted fan technique. Should the ducted fan UAV mature, it will be inserted into FCS Increment I development.

The FCS Class II UAV was deferred in Increment I and is expected to mature and become part of FCS Increment II. The Class III UAV in Increment I was combined with the Class IV UAV during a 3rd quarter, FY03, HQDA decision review. As a result, the same UAV will be used at both the battalion and brigade levels.

UAVs will contribute immeasurably in FCS Increment I as they are employed in the UA's tactics, techniques and procedures. Integrated into the FoS through compliance with the FCS architecture, these UAVs provide a 21st-century capability essential to the overarching goal of a network-centric knowledge-based force.

**The UAV can be positioned to provide communications coverage as the command maneuvers or to provide an enabling capability to forward forces for shaping and deep-strike missions.**

**UAVs provide a 21st-century capability essential to the overarching goal of a network-centric knowledge-based force.**

**COL JOHN D. BURKE** is the Army Unmanned Aerial Vehicle Project Manager.